What is claimed is:

1. A thermocouple produced by the method comprising:

removing insulation from a distal end of each of at least first and second thermocouple conductors;

forming a thermocouple junction at the distal ends of the at least first and second thermocouple conductors;

placing the thermocouple junction into a heat shrinkable polymer material by sliding an end of a tube of heat shrinkable polymer material over the thermocouple junction; and

sealing the thermocouple junction by heating and melting the polymer material.

2. The thermocouple of claim 1, wherein the sealing the thermocouple junction provides a reproducible confined shape having a height less than about 0.008 inches and a width less than about 0.010 inches.

3. The thermocouple of claim 2, wherein a height of the confined shape falls within a range of about 0.003 to 0.010 inches.

4. The thermocouple of claim 2, wherein a width of the confined shape falls within a range of about 0.005 to 0.0110 inches.

5. The thermocouple of claim 1, wherein a length of the thermocouple junction and the polymer seal falls within a range of about 0.05 to 0.5 inches.

6. The thermocouple of claim 1, wherein the placing the thermocouple junction into the heat shrinkable polymer material further comprises:

melting a second end of the tube to form the second end into a sealed dome shape.

7. The thermocouple of claim 1, wherein a second thermocouple junction is formed.

8. The thermocouple of claim 7, wherein the thermocouple junctions are formed at different locations along the thermocouple conductors.

9. The thermocouple of claim 1, wherein forming the thermocouple junction comprises soldering the distal ends of the thermocouple conductors.

10. The thermocouple of claim 1, wherein forming the thermocouple junction comprises welding the distal ends of the thermocouple conductors.

11. The thermocouple of claim 1, wherein the thermocouple conductors are conductors of types selected from a set of A.S.T.M. types T, J, K, E, S, R, and B.

12. The thermocouple of claim 1, wherein the polymer material is polyethylene terephthalate (PET).

13. The thermocouple of claim 1, wherein the polymer material is fluorinated ethylene propylene (FEP).

14. The thermocouple of claim 1, wherein the thermocouple is adapted and sized to fit into a catheter.

15. The thermocouple of claim 1, wherein the thermocouple junction further comprises a fuse such that the fuse causes the device to lose the properties of a thermocouple when an electrical rating is exceeded across the thermocouple junction.

16. The thermocouple of claim 1, wherein the device further comprises a fuse placed between a proximal end of at least one of the thermocouple conductors and the thermocouple junction, such that exceeding an electrical rating of the fuse breaks an electrical connection between the proximal end of the conductor and the thermocouple junction.

17. A thermocouple comprising:

a thermocouple junction formed by soldering distal ends of first and second thermocouple conductors, wherein a length of the junction falls within the range of about 0.03 inches to 0.07inches; and

heat shrinkable polymer material melted to seal and electrically insulate the thermocouple junction within a reproducible confined shape, wherein a height of the confined shape falls within a range of about 0.003 to 0.010 inches, and wherein a width of the confined shape falls within a range of about 0.005 to 0.0110 inches.

18. The thermocouple of claim 17, wherein a length of the thermocouple junction together with the polymer material falls within a range of about 0.05 to 0.5 inches.

19. A device comprising:

a plurality of thermocouple conductors including at least a first, a second and a third thermocouple conductor, wherein the first thermocouple conductor is of a first type, the second thermocouple conductor is of a second type, and the third conductor is of a type different from the second type;

at least first and second thermocouple junctions, wherein the first thermocouple junction is formed from the first and second thermocouple conductors and the second thermocouple junction is formed from the second and third thermocouple conductors; and

heat shrinkable polymer material melted to seal the at least first and second thermocouple junctions.

20. The device of claim 19, further comprising a distal end, wherein the at least first and second thermocouple junctions are positioned such that a first thermocouple junction is located at the distal end and the at least second thermocouple junction is located further from the distal end than the first thermocouple junction.

21. The thermocouple of claim 19, wherein the sealing the thermocouple junction provides a reproducible confined shape having a height less than about 0.008 inches and a width less than about 0.010 inches.

22. The device of claim 19, wherein the device is adapted and sized to fit into a catheter, and wherein the second end further comprises at least three terminations of the at least three thermocouple conductors, and wherein a difference in voltage at the thermocouple junctions available at the at least three terminations indicates a difference in temperature along the length of the catheter.

23. The device of claim 19, wherein the thermocouple conductor types are selected from a set of A.S.T.M. types T, J, K, E, S, R, and B.

24. A device comprising:

N thermocouple conductors including at least a first conductor and a second conductor;

a range of N/2 to N-1 thermocouple junctions formed from thermocouple conductor pairs, wherein a thermocouple junction is comprised of two thermocouple conductors of different types, and wherein one thermocouple conductor type may be used in comprising more than one thermocouple junction; and

heat shrinkable polymer material melted to seal thermocouple junctions.

25. The device of claim 24, wherein the device further comprises a distal end, and wherein the thermocouple junctions are formed at different distances from the distal end.

26. The device of claim 24, wherein the thermocouple conductor types are selected from a set of A.S.T.M. types T, J, K, E, S, R, and B.